

# 2021 ARCA ENGINEERING COMMITTEE MEETING

## ARKANSAS RIVER BASIN REPORT

Carlos Aragon, PE  
Corps of Engineers Annual Update  
South Pacific Division/Albuquerque District  
Water Management Section  
8 December 2021

John Martin Dam & Reservoir



Trinidad Dam & Reservoir



US Army Corps  
of Engineers®




# TOPICS

**Compact Year 2021 Water Management**


**John Martin Operations and Maintenance**

**USACE Water Quality Monitoring**

**Arkansas River Basin**



**2021 Water Management and Civil Works Activities**

  
US Army Corps of Engineers,  
Albuquerque District



# COMPACT YEAR 2021 WATER MANAGEMENT

## Basin Wide Summary



### Snowpack and Streamflow (May 1, 2021 Forecast)

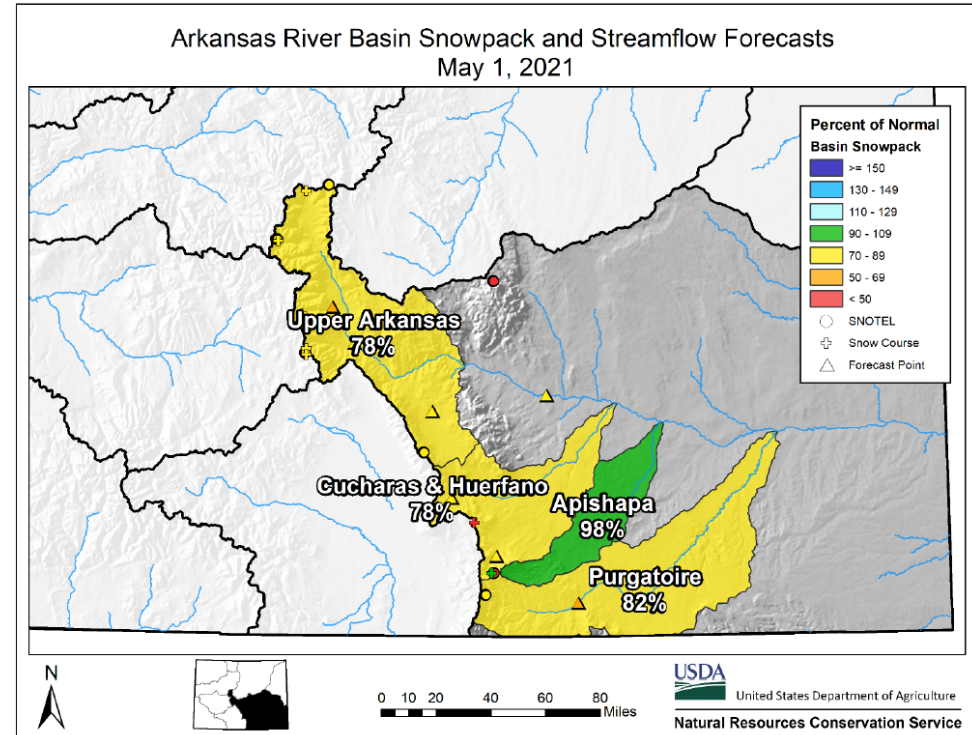
- Upper Arkansas Basin Snowpack – 78% of median
- Purgatoire River Basin Snowpack – 82% of median
- Basin Wide Total – 76% of median

### Trinidad Dam Storage and Releases:

- Maximum Storage = 31,264 af
- Minimum Storage = 15,549 af
- Peak Release = 2,553.5 cfs
- During the May 22-23 rainstorm event, releases from the dam were reduced to prevent downstream flooding

### John Martin Dam Storage and Releases:

- Maximum Storage = 70,260 af
- Minimum Storage = 16,590 af
- Peak Release = 1,061 cfs
- No Flood Risk Management Ops



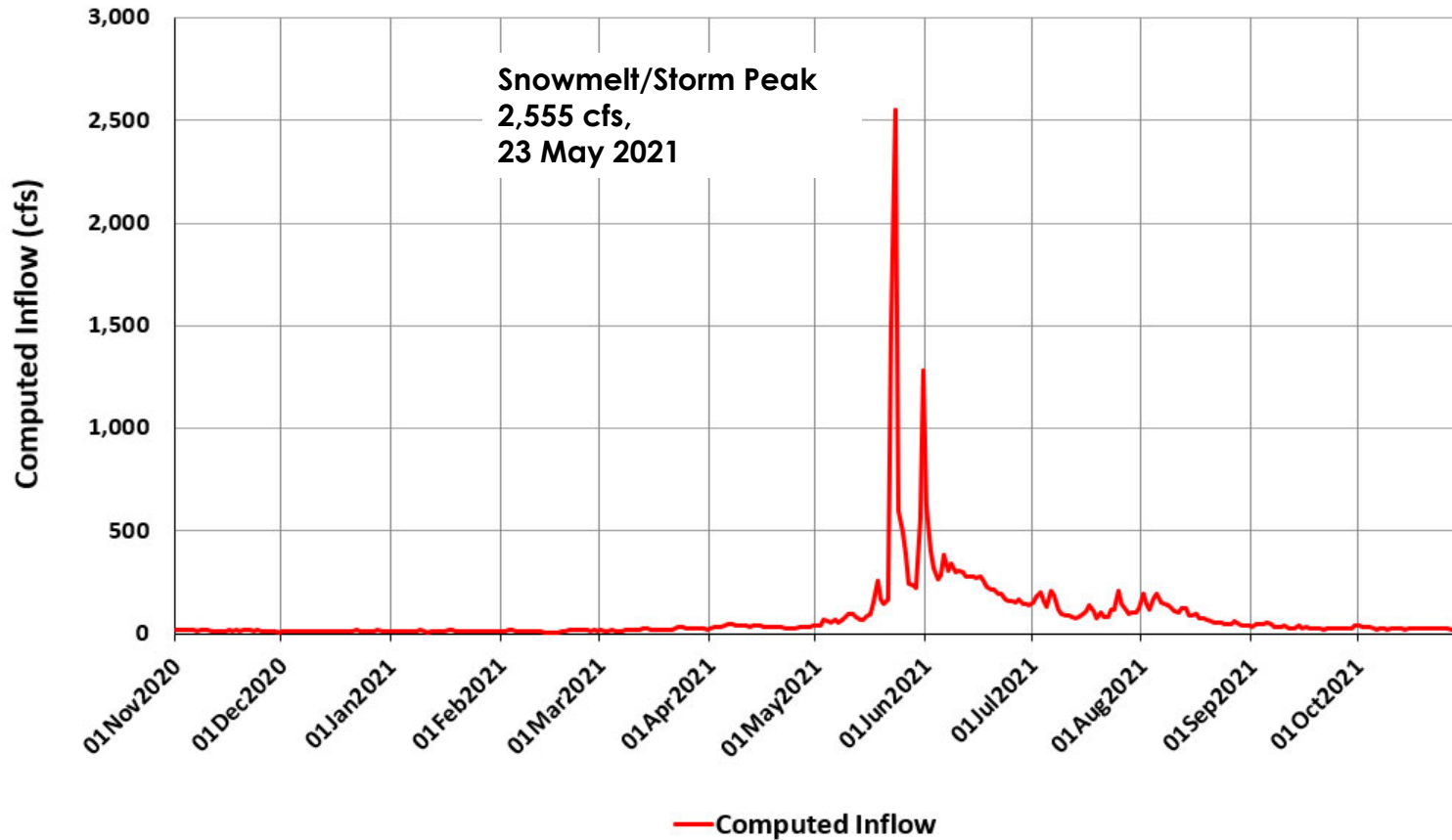


# COMPACT YEAR 2021 WATER MANAGEMENT

## Trinidad Dam and Lake



Total Computed Inflow for Compact Year 2021: 58,005 acre-feet

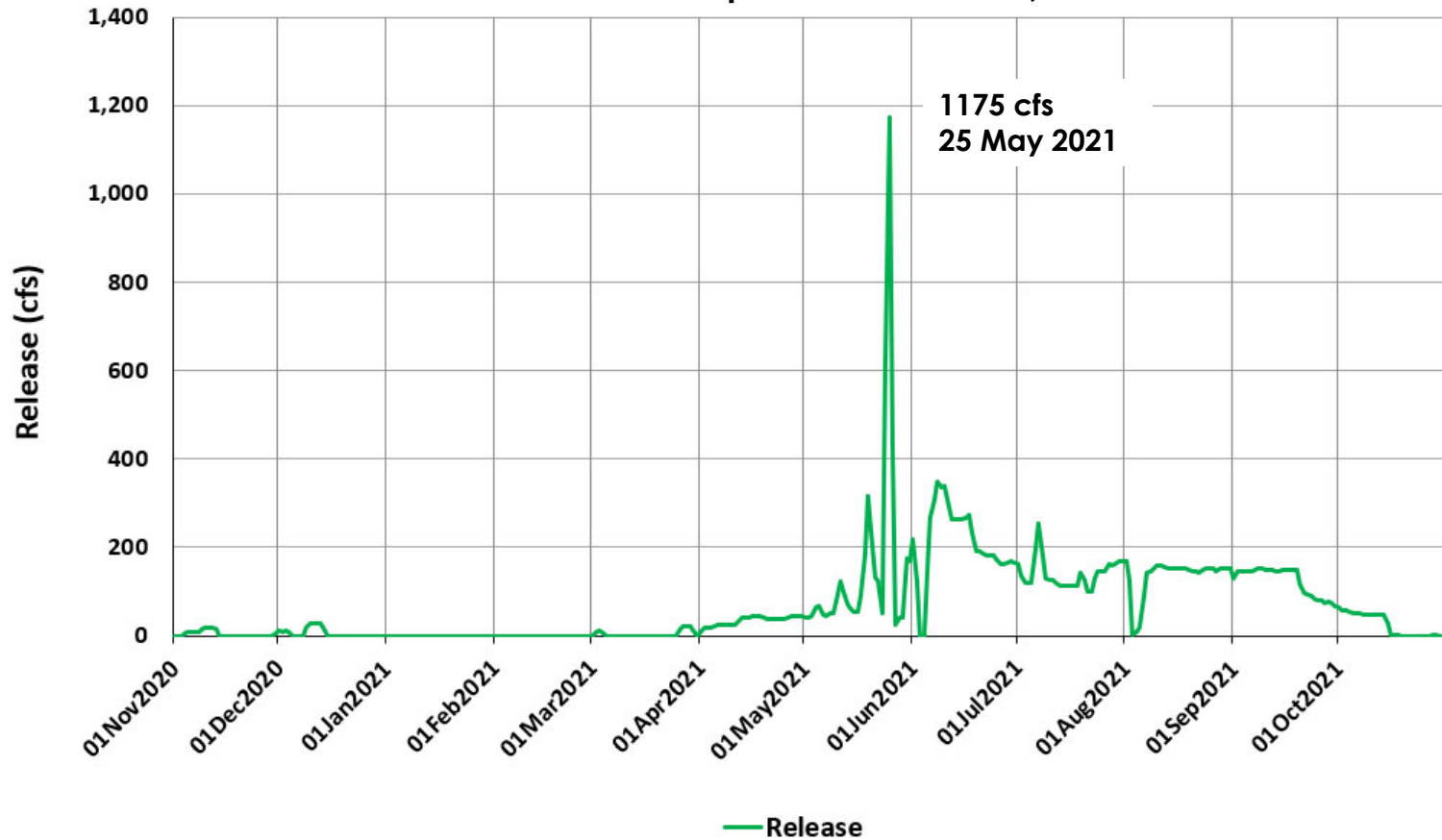




# COMPACT YEAR 2021 WATER MANAGEMENT

## Trinidad Dam and Lake

Total Outflow for Compact Year 2021: 50,580 acre-feet

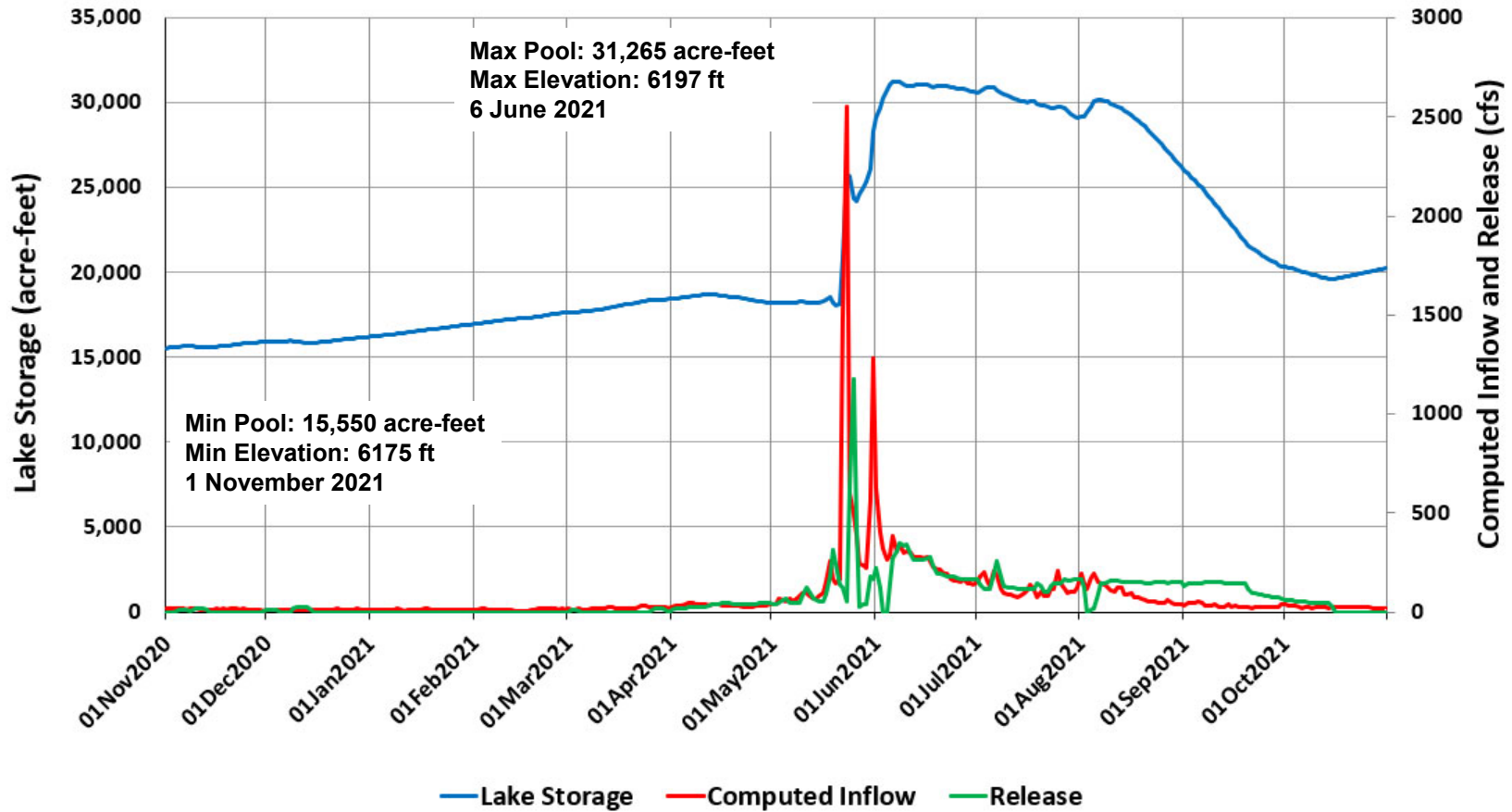






# COMPACT YEAR 2021 WATER MANAGEMENT

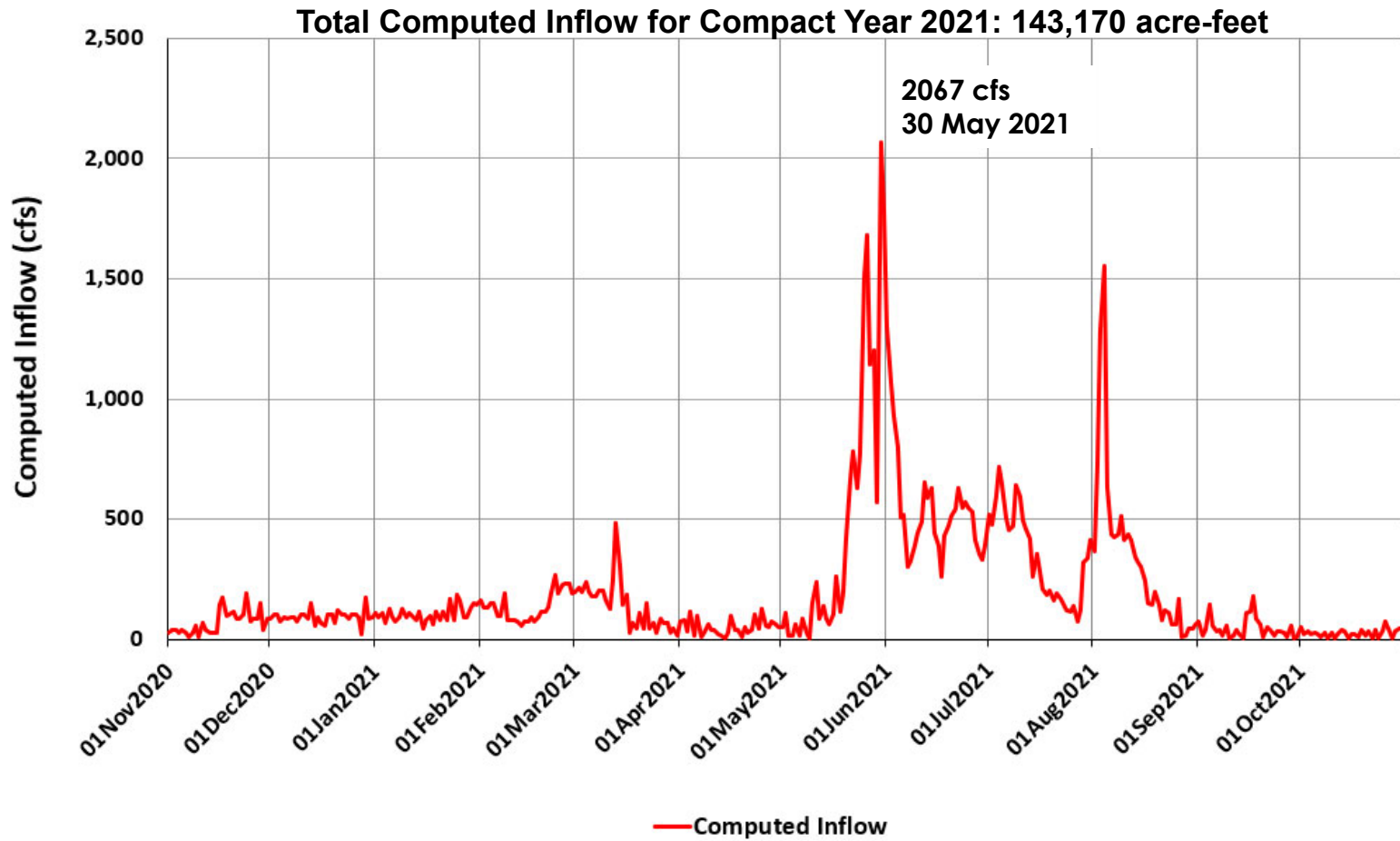
## Trinidad Dam and Lake





# COMPACT YEAR 2021 WATER MANAGEMENT

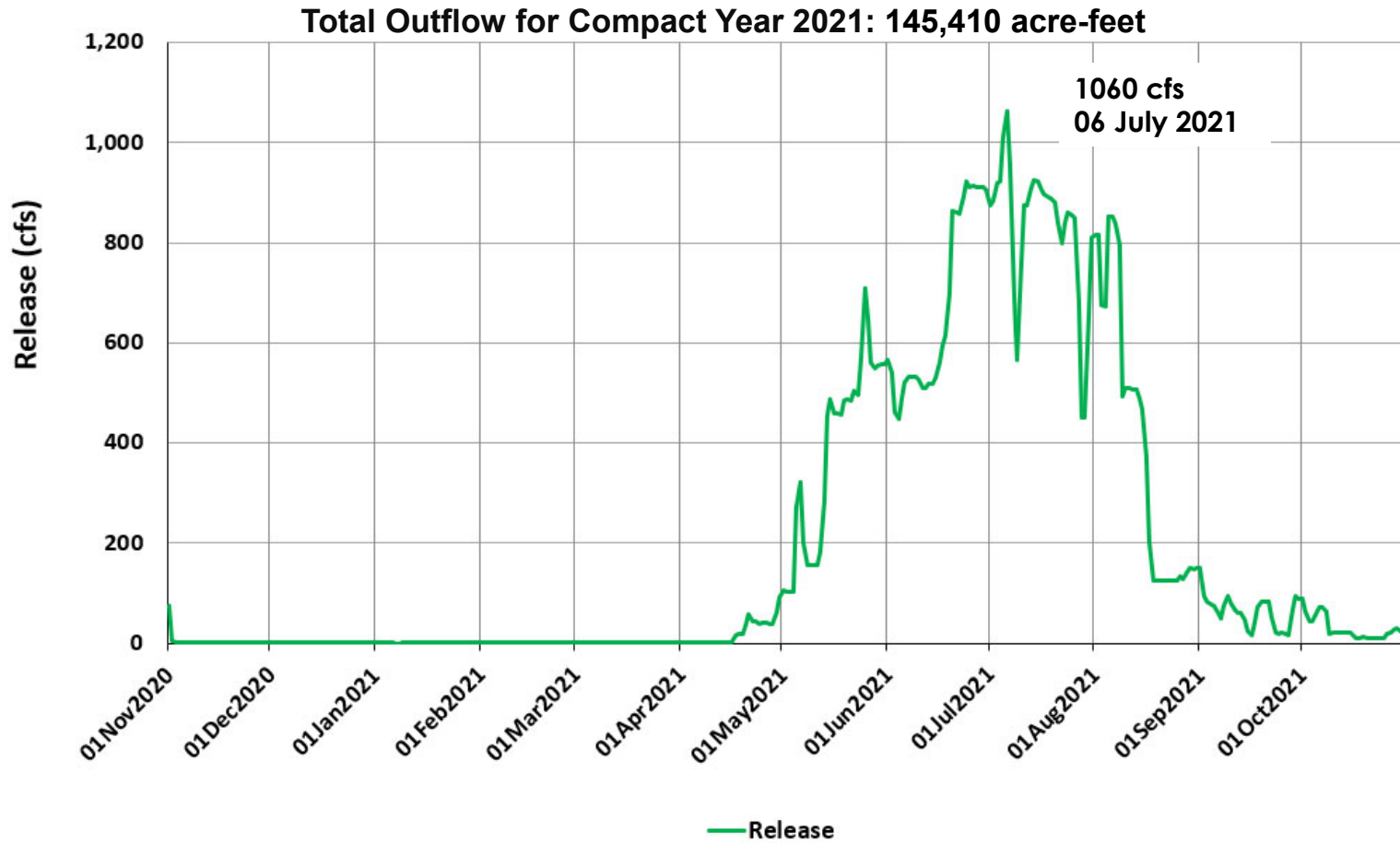
## John Martin Dam and Reservoir





# COMPACT YEAR 2021 WATER MANAGEMENT

## John Martin Dam and Reservoir

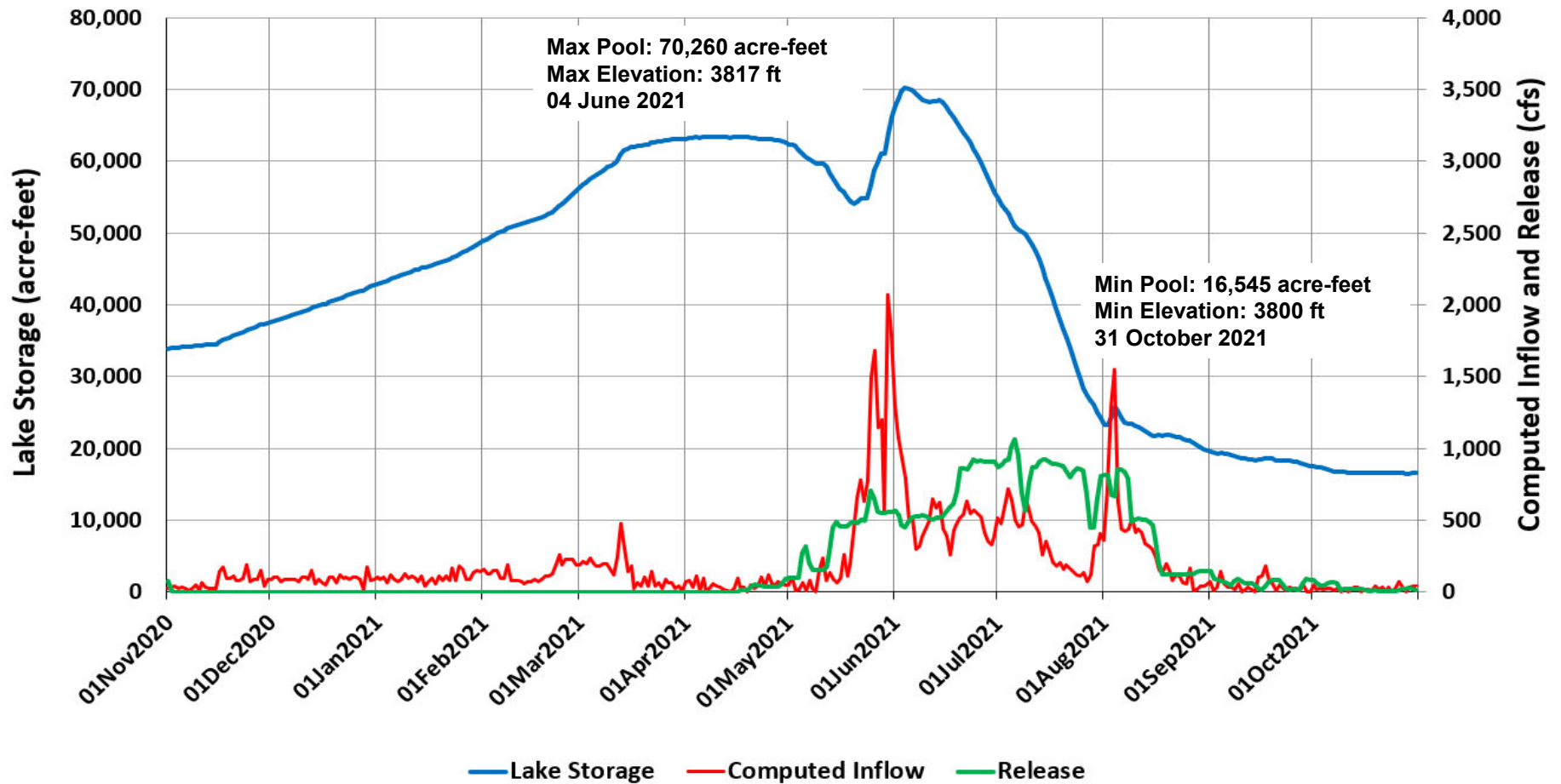






# COMPACT YEAR 2021 WATER MANAGEMENT

## John Martin Dam and Reservoir





# TRINIDAD OPERATIONS AND MAINTENANCE



## Emergency Power

- A new heavy equipment shed was constructed in the maintenance yard. This structure also houses the new projects emergency generator.

## Maintenance Contracts

- Contracts were awarded to replace the sump pump in the dam tower and to replace the packing glands on the two pairs of service and emergency gates.





# JOHN MARTIN OPERATIONS AND MAINTENANCE

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## Grouting gallery sump pump

- Thorough inspection and trouble shooting of primary and backup sump pumps after they stopped working.
- Repaired damaged components and documented future repairs that may be needed.

## Field investigation

- Samples of upstream sediments were collected to support dredging design which will allow for future conduit inspection and maintenance





# ARKANSAS WATER QUALITY MONITORING



## ● Reservoir Stations (2012 – Current)

Monthly during ice-free period

– Vertical profiles

Temperature

Dissolved oxygen

– Surface measurements

Turbidity

pH

Specific conductance

– Secchi depth

– Zebra and quagga mussel (June-October)

## ▲ Riverine Stations (2020 – 2025)

– 15-minute interval

Water Temperature

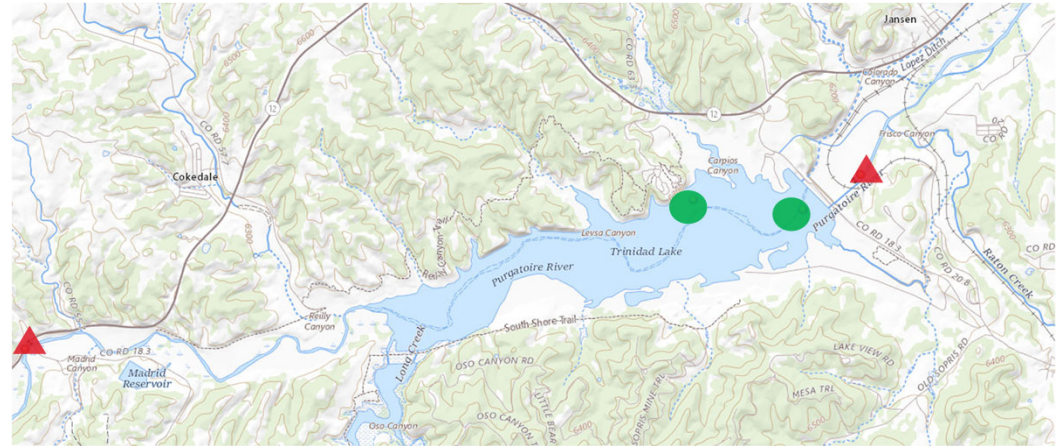
Dissolved oxygen

Turbidity

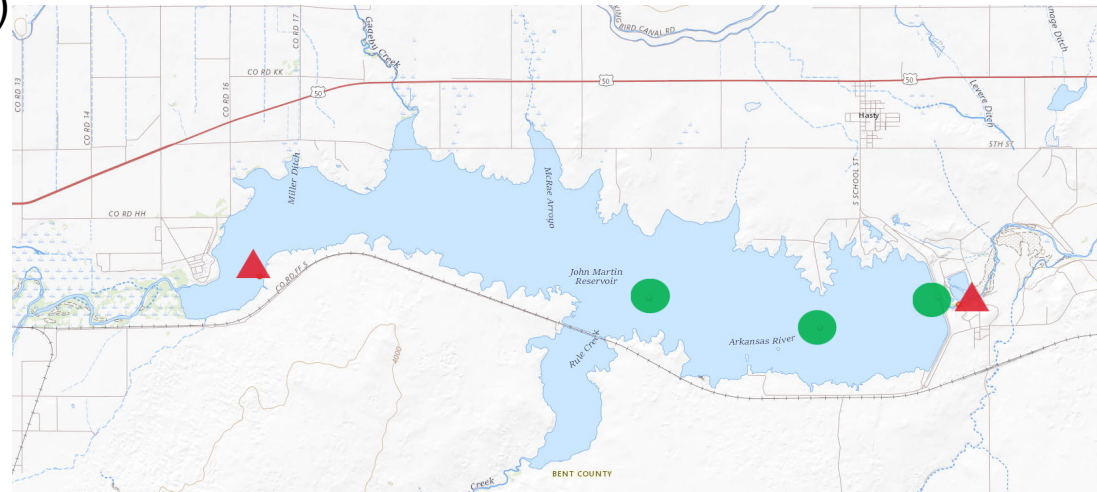
pH

Specific conductance

– Monthly anions/cations and total suspended sediment



**Trinidad Dam and Lake**



**John Martin Dam and Reservoir**





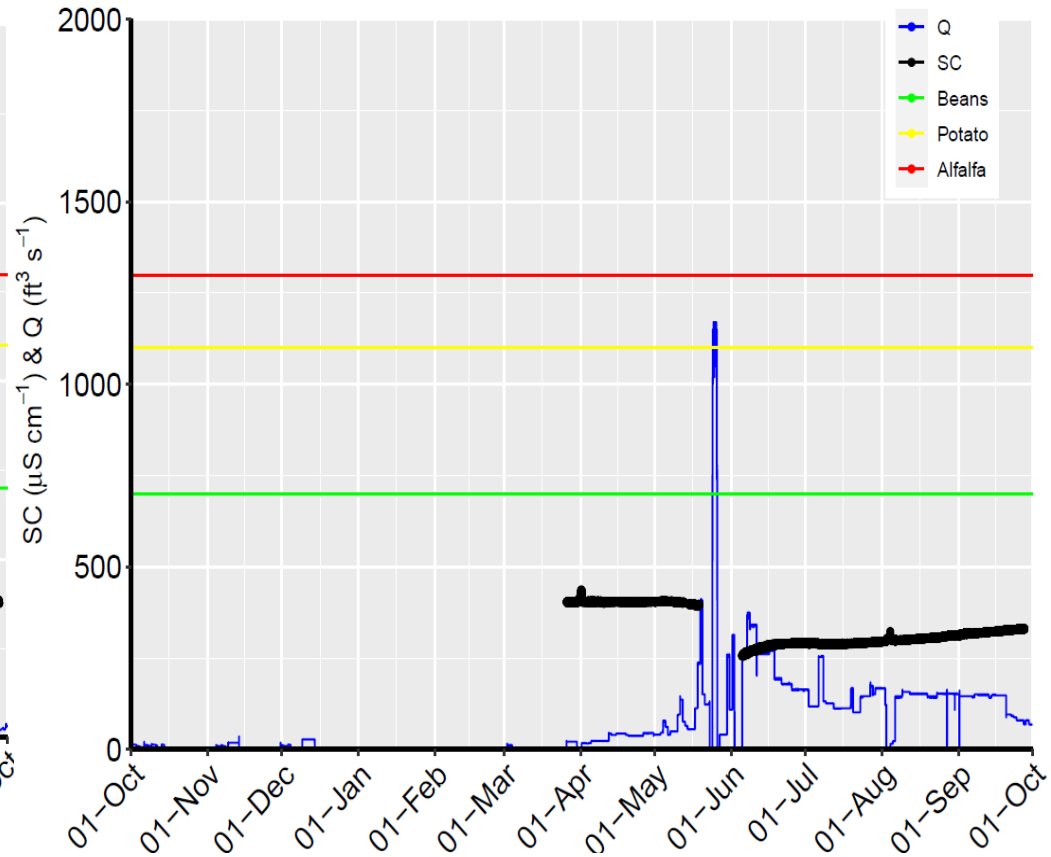
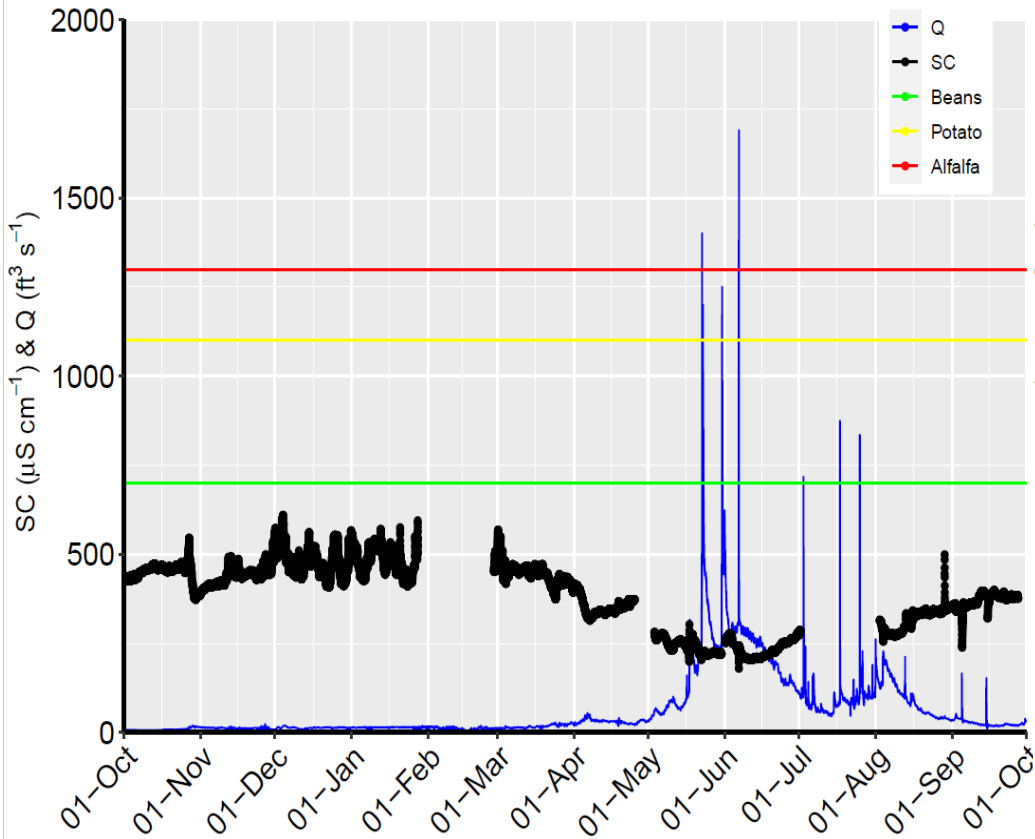
# ARKANSAS WATER QUALITY MONITORING DATA



Discharge, Specific Conductance, and Crop thresholds

Upstream of Trinidad (Madrid Gauge)

Downstream of Trinidad





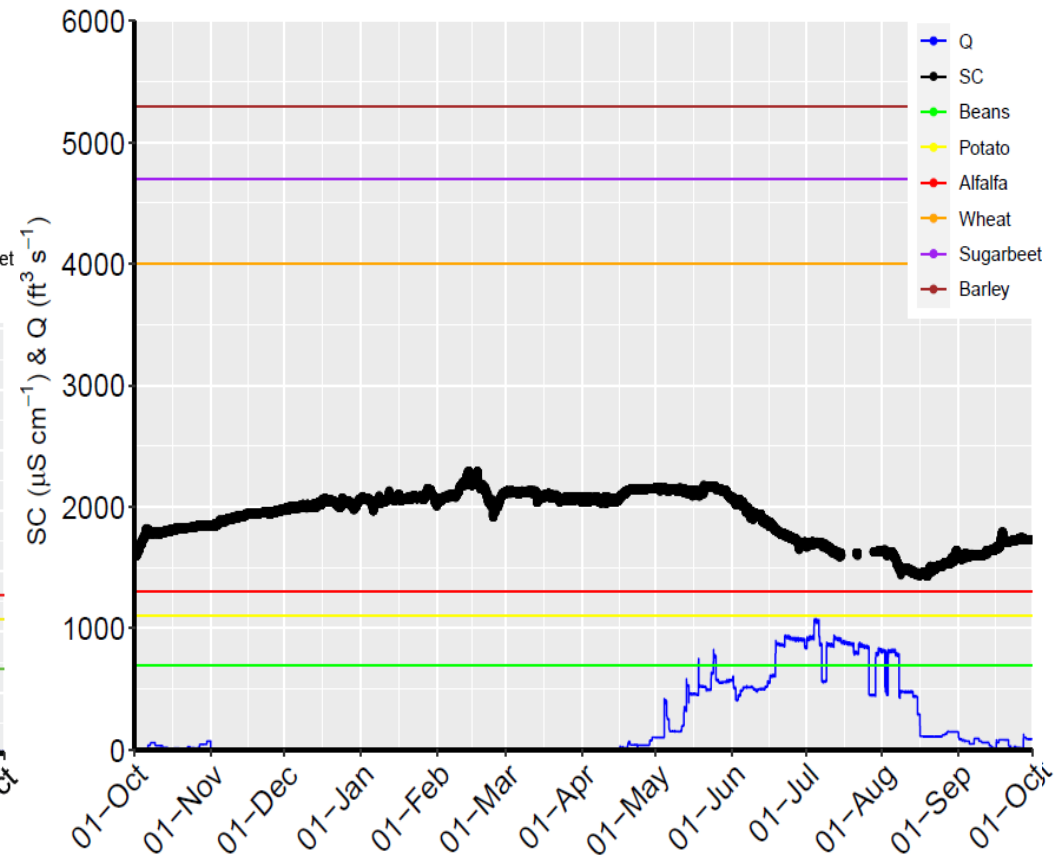
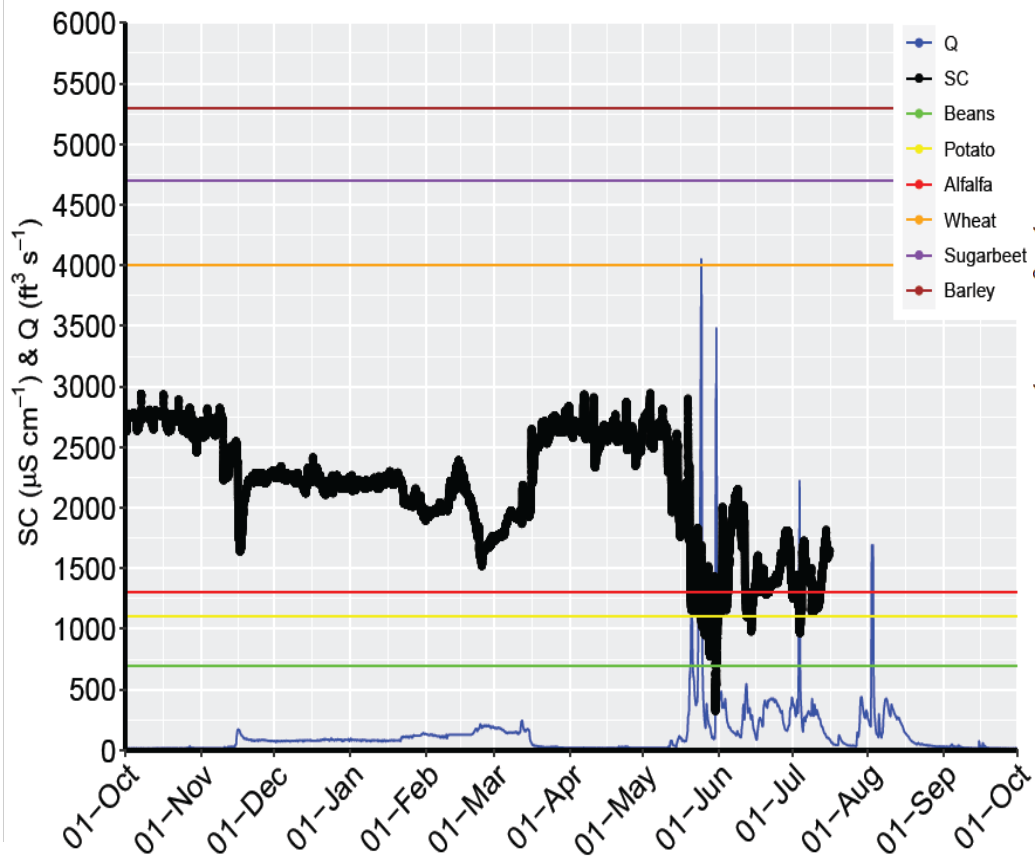
# ARKANSAS WATER QUALITY MONITORING DATA



Discharge, Specific Conductance, and Crop thresholds

Upstream of John Martin

Downstream of John Martin







# QUESTIONS / DISCUSSION



Flood sensor installation at John Martin Dam